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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,044	03/04/2002	Timothy J. Shepodd	SD-8345	6501

7590 01/08/2004  
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EXAMINER

THEXTON, MATTHEW

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 01/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/091,044

Applicant(s)

SHEPODD ET AL.

Examiner

Matthew A. Thexton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no discussion in the application as filed of the concept of a composition or method using same "at a pressure of less than about 1 atmosphere." The single experimental value is about 10 Torr (equivalent to about 0.0132 atmosphere). This is cited by applicant in the response as the basis for the cited limitation (in quotations, above). The original disclosure of efficacy at about 10 Torr is not considered to be indicative of efficacy for all pressures up to about 760 Torr (equivalent to 1 atmosphere). There is no indication in the original disclosure of an appreciation of an invention comprising of hydrogen (partial) pressure up to 76 times greater than disclosed (750 %).

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shepodd, et al. (US 5624598) in view of Streitwieser, Jr., et al. and Morikawa, et al. (US 6018048).

The Shepodd reference discloses the general application of getting hydrogen using an appropriately matched hydrogenation catalyst and hydrogenation susceptible compound. Further, the reference discloses systems which employ high surface area carriers and/or binders and fillers to permit utility in various environments. This reference appears to disclose all of the elements of all of the claims except for the particular hydrogenation susceptible compound, the polyphenyl ether. Shepodd discloses methods absorbing (claims 12-22) comprising "providing."

The Streitwieser reference discusses the well known catalytic hydrogenation chemistry of substituted benzenes, setting forth the caveat that some functional groups will hydrogenate preferentially, including "COR" which is an ether.

The Morikawa reference discloses catalytic hydrogenation of phenyl ether to saturate the aromatic portion (column 9, line 39 and 43) and employs temperatures up to 300 degree Celsius (column 12, lines 20-33). The ethers suggested in Morikawa actually are derivatives of benzene, since it is the aromatic functionality which is the focus of the hydrogenation (column 9, lines 17-20). In view of Morikawa et al., the Streitwieser, Jr., et al. caveat is not a counter suggestion when the ether is bis-phenyl, rather it suggests that the aromatic or double bonds will preferentially hydrogenate. In view of the references taken together, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed poly-phenyl ethers

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as catalytic hydrogenation compounds in the techniques taught by Shepodd et al. in order to obtain their higher temperature stability and with a reasonable expectation of success. The claims include a limitation that the polyphenyl ether is comprised of at least 3 basic structural units. While this is different than the bis-phenyl ether specifically set forth in Morikawa et al., it is clear that the Morikawa reference stands for all its teachings, not just the exemplified or listed species. Poly-phenyl ether is so structurally similar to diphenyl ether and is suggested by the broad class of compounds "benzene and its derivatives" (column 9, lines 19-20) that it would be an obvious variation and choice due to its close chemical structure.

Morikawa et al. teach hydrogen partial pressure of one atmosphere or higher for the method. This is not a point of distinction for the claimed compositions or the methods as claimed. Given the disclosures of Shepodd, Streitwieser, and Morikawa simultaneously, one of ordinary skill in the art would have a reasonable expectation of success at pressure less than about 1 atmosphere. One of ordinary skill in the art would understand that Morikawa is disclosing economic limitations, not functional limitations for diffusion moderated reactions in gettering situations as disclosed by Shepodd.

### ***Response to Amendment***

Applicant's remarks forming a part of the amendment filed 2003 December 8 begin at page 6 thereof.

Applicant notes that the Morikawa reference explicitly states that at hydrogen pressure below 1 atmosphere no "sufficient" hydrogenation rate can be obtained

(column 12, lines 26-32). While this is true, it fails to consider the context or construct of the statement of rejection or the of the reference. As noted in the statement of rejection hereinabove, Shepodd suggests hydrogenation reactants for hydrogen gettering at sub-atmospheric conditions, which would lead one of ordinary skill to liberally interpret the Morikawa disclosure outside of its strict constraints which are informed by the economic considerations (column 12, lines 26-32) surrounding rapidly making hydrogenated products.

At page 7, last paragraph, of applicant's response, it is urged that Morikawa explicitly teaches away from the use of his inventions in the presence of oxygen. What the Morikawa reference suggests is that the catalytic activity may be inhibited by oxygen or oxygen containing gases (column 12, lines 15-19). Here again, one of ordinary skill in the art would be considering the full disclosure of Morikawa in view of Shepodd and Streitwieser. It is concluded that one of ordinary skill in the art would not have been demotivated from employing the functional formulations suggested by Morikawa because oxygen appears to be competing or inhibiting but not destroying the efficacy of the formulation.

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Thexton whose telephone number is 571-272-1125. The examiner can normally be reached on Monday-Friday, 9:30 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan S Jagannathan can be reached on 571-272-1119. The fax

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phone number for the organization where this application or proceeding is assigned is  
(703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or  
proceeding should be directed to the receptionist whose telephone number is 703-308-  
0661.

*M. A. Thexton*

Matthew A. Thexton  
Primary Examiner  
Art Unit 1714